

Application No. 10/561,650  
Second Preliminary Amendment

Docket No.: 60680-2089

AMENDMENTS TO THE CLAIMS

1. (Original) A plain bearing having a sliding layer of a bearing material thereon, the bearing material comprising a polymer-based matrix selected from the group comprising modified epoxy resin and polyimide/amide resin, the matrix having contained therein at least one addition selected from the group comprising metal powder in the range from 15 to 30vol%, a fluoropolymer in the range from 1 to 15vol%, ceramic powder in the range from 0.5 to 20vol%, and, silica in the range from 2 to 15vol%.

2-36. (Cancelled)

37. (New) A plain bearing according to claim 1, wherein the modified epoxy resin comprises from 30 to 60w/w epoxy resin and 70 to 40w/w phenolic resin based on solid to solids content.

38. (New) A plain bearing according to claim 1, wherein the modified epoxy resin also contains an amino resin.

39. (New) A plain bearing according to claim 1, wherein the modified epoxy resin also contains vinyl resin.

40. (New) A plain bearing according to claim 1, wherein the modified epoxy resin is prepared from an uncured epoxy resin matrix mixture, and the uncured epoxy resin matrix mixture contains two or more distinct epoxy resin constituents.

41. (New) A plain bearing according to claim 1, wherein polyimide is a majority constituent in the polyimide/amide matrix resin.

42. (New) A plain bearing according to claim 41, wherein the polyimide/amide resin also contains a vinyl resin constituent.

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43. (New) A plain bearing according to claim 1, wherein the metal powder is selected from the group consisting of tungsten, aluminum, copper, silver, tin, brass, bronze, stainless steel, and nickel.

44. (New) A plain bearing according to claim 43, wherein the metal powder comprises a mixture of different metal powders.

45. (New) A plain bearing according to claim 44, wherein the metal powder comprises a mixture of aluminum and tungsten metals, and the proportion of aluminum to tungsten is in the range between 30/70 and 70/30 Al/W volume%.

46. (New) A plain bearing according to claim 45, wherein the proportion of Al to W is approximately 40/60% Al/W by volume.

47. (New) A plain bearing according to claim 45, wherein the morphology of the W particles is nodular or rounded.

48. (New) A plain bearing according to claim 45, wherein the Al powder is of flake or leaf-like morphology.

49. (New) A plain bearing according to claim 1, wherein the metal powder comprises metal powder particles having a particle size in the range from 0.5 to 10 $\mu$ m.

50. (New) A plain bearing according to claim 1, wherein the metal powder is selected from the group consisting of a mixture of aluminum and tin, a mixture of silver and copper, a mixture of copper and tungsten, and a mixture of silver and tungsten.

51. (New) A plain bearing as claimed in claim 1, wherein the metal powder comprises metal alloy particles.

52. (New) A plain bearing according to claim 51, wherein the metal alloy is selected from the group consisting of stainless steel, aluminum alloys, brass, and bronze.

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53. (New) A plain bearing according to claim 1, wherein the fluoropolymer is polytetrafluoroethylene.

54. (New) A plain bearing according to claim 1, wherein the at least one addition comprises a fluoropolymer, and the fluoropolymer content lies in the range from 1 to 15vol%.

55. (New) A plain bearing according to claim 1, wherein the at least one addition comprises a fluoropolymer, and the fluoropolymer content lies in the range from approximately 2 to 8vol%.

56. (New) A plain bearing according to claim 1, wherein the ceramic powder is selected from the group consisting of oxides, nitrides, carbides, silicates and sulfides.

57. (New) A plain bearing according to claim 1, wherein the at least one addition comprises a ceramic powder, and the ceramic powder content lies in the range from 2 to 20vol%.

58. (New) A plain bearing according to claim 1, wherein the at least one addition comprises silica, and the silica content lies in the range from 4 to 10vol%.

59. (New) A plain bearing according to claim 1, wherein the silica comprises particles having a particle size from 20 to 50 nanometers.

60. (New) A plain bearing according to claim 1, wherein the silica comprises reactive silica particles, each reactive silica particle having a surface with which at least one "-OH" group is associated.

61. (New) A plain bearing according to claim 1, wherein the at least one addition does not exceed 35vol%.

62. (New) A plain bearing according to claim 61, wherein the solids content of the at least one addition is from approximately 10 to 30vol%.

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63. (New) A plain bearing according to claim 1, further including a silane material in the range of approximately 0.2 to 3 vol%.

64. (New) A plain bearing according to claim 63, wherein the silane material is selected from the group consisting of: bis-(gamma-trimethoxysilylpropyl) amine and gamma-glycidoxypolytrimethoxysilane.

65. (New) A plain bearing according to claim 1, wherein the bearing material is a first bearing material and a second bearing material, and the first bearing material is deposited on a layer of the second bearing material.

66. (New) A plain bearing according to claim 65, wherein the second bearing material is selected from an aluminum alloy and a copper alloy.

67. (New) A plain bearing according to claim 65, wherein the first bearing material has a thickness of approximately 5 to 40  $\mu$ m.

68. (New) A plain bearing according to claim 1, wherein the bearing material is deposited directly upon a strong backing material.

69. (New) A plain bearing according to claim 68, wherein the bearing material has a thickness of from approximately 40 to 100  $\mu$ m.

70. (New) A plain bearing according to claim 1, wherein the bearing material is applied as a liquid to a substrate.

71. (New) A plain bearing according to claim 70, wherein the liquid is sprayed.